

193C—4.1(542B) Requirements for licensure by examination. The specific requirements for initial licensing in Iowa are established in Iowa Code section 542B.14, and it is the board's intention to issue initial licensure only when those requirements are satisfied as set forth in the statute.

4.1(1) First, the applicant for initial licensure in Iowa must satisfy the educational requirements as follows:

a. Graduation from an engineering program of four years or more.

(1) If an applicant did not graduate from an Accreditation Board of Engineering and Technology/Engineering Accreditation Commission (ABET/EAC)- or Canadian Engineering Accreditation Board (CEAB)-accredited curriculum, the applicant must also complete, in addition to the engineering degree, one extra year of practical experience satisfactory to the board after receiving the engineering degree. The experience must be verified by a professional engineer (PE) supervisory reference.

(2) An engineering technology curriculum does not constitute an engineering program of four years or more.

b. If an applicant obtained an associate of science degree or a more advanced degree between July 1, 1983, and June 30, 1988, the board shall only require satisfactory completion of a minimum of two years of postsecondary study in mathematics, physical sciences, engineering technology, or engineering at an institution approved by the board and six years of practical experience which, in the opinion of the board, is of satisfactory character to properly prepare the applicant for the Fundamentals of Engineering examination. (Applicants qualifying under this subrule must successfully complete the Fundamentals of Engineering examination by June 30, 2001.)

c. The educational requirement may be fulfilled by a master's degree in engineering from an institution in the United States of America which offers an accredited bachelor's degree in the same curriculum. The master's degree candidate must be required to fulfill the requirements for the bachelor's degree in the same area of specialization. An applicant with a master's degree in engineering from an institution in the United States of America that does not offer an accredited bachelor's degree in the same curriculum will be required to have an additional year of qualifying experience obtained after receipt of the qualifying degree. Applicants using a master's degree as the qualifying degree may not also use the master's degree for qualifying experience credit.

d. The educational requirement may be fulfilled by a doctor of philosophy degree in engineering from an institution in the United States of America which offers an accredited bachelor's degree in the same curriculum. The doctoral candidate must be required to fulfill the requirements for the bachelor's degree in the same area of specialization. An applicant with a doctor of philosophy degree in engineering from an institution in the United States of America that does not offer an accredited bachelor's degree in the same curriculum will be required to have an additional year of qualifying experience obtained after receipt of the qualifying degree. Applicants using a doctor of philosophy degree as the qualifying degree may not also use the doctor of philosophy degree for qualifying experience credit or as an exemption for the Fundamentals of Engineering examination (FE exam).

4.1(2) Second, the applicant must successfully complete the FE exam.

a. An applicant may take the FE exam any time after the educational requirements as specified above are completed, but the applicant must successfully complete the FE exam prior to taking the Principles and Practice of Engineering examination.

b. College seniors studying an ABET/EAC- or CEAB-accredited curriculum may take the FE exam during the final academic year. Applicants will be permitted to take the examination during the testing period which most closely precedes anticipated graduation.

c. An applicant who graduated from a satisfactory engineering program and has ten years or more of work experience satisfactory to the board shall not be required to take the FE exam. This experience is in addition to the four or five years of experience required for the PE license.

d. An applicant who has earned a Doctor of Philosophy degree from an institution in the United States of America with an accredited Bachelor of Science engineering degree program in the same discipline, or a similar doctoral degree in a discipline approved by the board, shall not be required to take the FE exam.

e. All FE exam candidates will apply directly to the National Council of Examiners for Engineering and Surveying (NCEES) and will self-attest as to the candidate's eligibility to sit for the FE exam. The board will verify acceptable education and experience at the time an applicant applies for an Engineer in Training (EIT) number. The board shall apply the education and experience standards set forth in this rule but will allow reasonable flexibility in timing in the event an applicant sat for and passed the FE exam at a point earlier than provided in this rule. The board will not, however, issue an EIT number unless all experience required for candidates who hold engineering degrees from nonaccredited programs has been satisfied at the time of the EIT application.

4.1(3) Third, the applicant must successfully complete the Principles and Practice of Engineering examination (PE exam).

a. An applicant may take the PE exam any time after passing the FE exam.

b. All PE exam candidates will apply directly to the NCEES. The applicant will be required to document a qualifying education. The board will verify acceptable experience at the time the applicant applies for a professional engineer license.

4.1(4) Fourth, the applicant must satisfy the qualifying experience requirements. The purpose of this provision is to ensure that the applicant has acquired the professional judgment, capacity, and competence to design engineering works, structures, and systems. The following criteria will be considered by the board in determining whether an applicant's experience satisfies the statutory requirements.

a. Oversight. All applicants must have direct supervision or professional tutelage (instruction, guidance, mentoring, review, and critique) from one or more licensed professional engineers. This experience must be verified by one or more licensed professional engineers who are familiar with the applicant's work and can attest that the experience was of the required quality and was accurately described. Verification of the qualifying experience is provided through the reference forms. It is the responsibility of the applicant to provide reference forms to the licensed professional engineers to complete and return directly to the board.

(1) To be readily acceptable, all of the qualifying experience shall be under the direct supervision and tutelage of one or more licensed professional engineers.

(2) To be considered, a portion of the qualifying experience shall be under the direct supervision or tutelage of one or more licensed professional engineers. In this case, the rest of the qualifying experience shall be under the direct supervision or tutelage of an unlicensed graduate engineer.

b. Documentation of experience. All applicants must submit references and a work project description. The board reserves the right to contact the employer and the person providing tutelage on the project for information about the project experience acquired by the applicant.

(1) References. An applicant for the professional engineer license shall submit three references from professional engineers or a combination of professional engineers and graduate engineers on forms provided by the board.

1. At least one of the licensed professional engineers who provide a reference for the applicant shall have provided direct supervision or professional tutelage in the course of a mentoring relationship on such matters as technical skills; professional development; the exercise of professional judgment, ethics, and standards in the application of engineering principles and in the review of such matters by others; and the professional obligations of assuming responsible charge of professional engineering works and services.

2. If the applicant has had more than one supervisor, at least two of the references shall be from a supervisor of the applicant. An applicant shall submit supervisor references to verify at least four years of qualifying experience.

3. If an applicant has had professional experience under more than one employer, the applicant shall provide references from individuals with knowledge of the work performed under a minimum of two employers.

4. The board reserves the right to contact references, supervisors, or employers for information about the applicant's professional experience and competence or to request additional references.

5. The board uses references partially as a means of verifying an applicant's record of experience. The applicant must distribute a reference form to individuals who are asked to submit references for the

applicant. To each reference form, the applicant shall attach a narrative of the applicant's experience record that is being addressed by the referring individual.

6. The board may require the applicant to submit other evidence of suitable tutelage and supervision.

7. The board may require an oral interview with the applicant or other evidence to verify the applicant's knowledge and experience in the principles and practice of engineering.

8. The board may conduct interviews with persons providing tutelage or supervision to the applicant.

(2) Work project description. An applicant for initial licensure as a professional engineer must include with the application a work project statement describing a significant project on which the applicant worked during the previous 12 months. The board will review all work project statements and will approve only those that include all of the components listed below in numbered paragraphs 4.1(4) "b"(2)"1" to "4" and meet the criteria listed in numbered paragraph 4.1(4) "b"(2)"5."

1. The statement shall describe the applicant's degree of responsibility for the project.

2. The statement shall identify the project's owner and location.

3. The statement shall include the name of the supervisor in charge of the project and, if the supervisor is a professional engineer, the license number of the supervisor.

4. The statement shall be signed and dated by the applicant.

5. Criteria the board shall use in evaluating the acceptability of the project as qualifying experience for the applicant shall include, but not be limited to, the following:

- The degree to which the project and the experience described have progressed from assignments typical of initial assignments to those more nearly expected of a licensed professional;

- The scope and quality of the professional tutelage experienced by the applicant;

- The technical decisions required of the applicant in the project; and

- The professional decisions required of the applicant.

c. *Quality.* Qualifying experience shall be of such quality as to demonstrate that the applicant has developed technical skill and initiative in the correct application of engineering principles. Such experience should demonstrate the applicant's capacity to review the application of these principles by others and to assume responsibility for engineering work of professional character.

d. *Scope.* Experience shall be of sufficient breadth and scope to ensure that the applicant has attained reasonably well-rounded professional competence in a basic engineering field, rather than highly specialized skill in a narrow and limited field.

e. *Progression.* The record of experience shall indicate successive and continued progress from initial, subprofessional work of simpler character to recent, professional work of greater complexity and a higher degree of responsibility, as well as continued interest and effort on the part of the applicant toward further professional development and advancement. In evaluating this progression, the board will consider both subprofessional and professional activity as reported by the applicant. However, only work experience obtained after the applicant's receipt of the qualifying degree will be considered, except as described in paragraph 4.1(4) "f." Subprofessional work includes the time spent as an engineering technician, engineering assistant, inspector, or similar under the direct supervision of a licensed professional engineer. Professional work includes the time during which the applicant was occupied in engineering work of higher grade and responsibility than that defined above as subprofessional work. Time spent in teaching engineering subjects in a college or university at the level of assistant professor or higher may be listed as professional work.

f. *Special work experience.* Work experience prior to graduation from college may be accepted toward satisfaction of qualifying experience requirements only as follows: Cooperative work programs and internships administered by engineering colleges and verified on the transcript, with a verifying reference from the internship supervisor, will be considered as half-time credit, with a maximum allowance of 6 months (12 months of cooperative work experience or internship) applicable toward the satisfaction of qualifying experience requirements. An applicant's advanced education, military experience, or both will be reviewed in order to determine if they are applicable toward the statutory requirements for experience.

g. Advanced education. An applicant who has earned a master of science degree that includes research experience, in addition to writing an associated thesis, from an institution in the United States of America with an accredited bachelor of science engineering degree program in the same discipline and who has fulfilled the requirements for a bachelor of science degree may be granted a maximum of one year's experience credit. An applicant who has earned a doctor of philosophy degree from an institution in the United States of America with an accredited bachelor of science engineering degree program in the same discipline may be granted a maximum of two years of experience credit in addition to the one-half year's credit for the master of science degree. An applicant using an advanced degree as experience credit shall not be allowed to also use the advanced degree as the qualifying degree to become licensed.

h. Teaching experience. Teaching of engineering subjects at the level of assistant professor or higher in an accredited engineering program may be considered as experience, provided the applicant's immediate supervisor is a licensed professional engineer in the jurisdiction in which the college or university is located. If the applicant's immediate supervisor is not a licensed professional engineer, a program of mentoring or peer review by a licensed professional engineer acceptable to the board must be demonstrated. Applicants using teaching or research as experience must have a minimum of four years of acceptable experience in research, industry, or consulting. The board shall consider the complexity of the project(s) presented, the degree of responsibility of the applicant within the project, and other factors the board deems relevant. Academic experience must demonstrate increasing levels of responsibility for the conduct and management of projects involving engineering research, development, or application. The board reserves the right to contact employers for information about the applicant's professional experience and competence.

i. Joint applications. Applicants requesting licensure both as a professional engineer and a land surveyor must submit a history of professional experience in both fields. Such histories will be considered separately on a case-by-case basis. The board does not grant full credit for concurrent experience in both professions.

j. Corporate exemption. The purpose of the provisions on qualifying experience which authorize the board to consider some experience that was not acquired under the direct supervision and tutelage of a licensed professional engineer is to provide a path toward licensure for those applicants who gain experience in settings where licensure is not required under the corporate exemption set forth in Iowa Code section 542B.26 or under similar statutory provisions in other jurisdictions. Such applicants may lawfully gain professional engineering experience under the supervision or tutelage of graduate engineers who are not licensed. To aid such applicants, the following guidelines are provided:

(1) The board shall not consider any experience gained under circumstances where the applicant could not lawfully have practiced professional engineering.

(2) The board shall not consider any experience the applicant may have attained in compliance with the law but that was not under the supervision or tutelage of a graduate engineer. The fundamental purpose of qualifying experience is professionally guided training to expand and complement engineering education. Self-guided experience does not qualify.

(3) Persons who desire licensure as professional engineers who are not directly supervised by licensed professional engineers should form tutelage relationships with licensed professional engineers as early in the process of gaining experience as is feasible. Unlicensed graduate engineers are not authorized to offer professional engineering services to the public or to be in responsible charge of such services; nor are they subject to the examinations required for licensure, the professional and ethical standards applicable to licensees, or the regulatory oversight of a licensing authority. Qualifying experience is intended to address both technical competence and the obligations to the public of a licensed professional engineer.

(4) Because the circumstances of individual applicants in corporate exemption settings are diverse, it is not possible to identify the minimum period of time during which the applicant must receive supervision or tutelage from one or more licensed professional engineers to be eligible for licensure. The board shall take into consideration both the quantity and quality of such experience. In general, an applicant's exposure to supervision or tutelage by one or more licensed professional engineers should reflect a sustained period of in-depth interaction from which the licensed engineers are in a position

to form credible opinions on the applicant's qualifications to be in responsible charge of engineering services offered to the public as a licensed professional engineer.

(5) The burden is on the applicant to demonstrate to the board's satisfaction that the combination of unlicensed and licensed supervision and tutelage satisfies the requirements of qualifying experience described in this rule.

k. Practical experience. An applicant for a professional engineer license shall have a minimum of one year of practical experience in the United States of America or a territory under its jurisdiction.

4.1(5) Education and experience requirements. The board will require the minimum number of years set forth on the following chart before an applicant will be eligible for licensure.

Experience Requirements	
If the education is:	Required years of experience
A 4-year bachelor's degree in a nonaccredited engineering program	5
A 4-year bachelor's degree in an accredited engineering program OR a qualifying master's degree pursuant to paragraph 4.1(1) "c" OR a qualifying PhD pursuant to paragraph 4.1(1) "d"	4
A 4-year bachelor's degree in an accredited engineering program plus a qualifying master's degree pursuant to paragraph 4.1(4) "g"	3
A 4-year bachelor's degree in an accredited engineering program plus a qualifying PhD pursuant to paragraph 4.1(4) "g"	2
A 4-year bachelor's degree in an accredited engineering program AND a qualifying master's degree AND a qualifying PhD pursuant to paragraph 4.1(4) "g"	1

4.1(6) Required examinations. All examinations are uniform examinations prepared and graded by the National Council of Examiners for Engineering and Surveying (NCEES). The board may negotiate an agreement with an examination service to administer the examinations to applicants approved by the board, in which case applicants shall pay examination fees directly to the service.

a. Fundamentals of Engineering examination. The Fundamentals of Engineering examination is a computer-based examination covering general engineering principles and other subjects commonly taught in accredited engineering programs.

b. Principles and Practice of Engineering examination. The Principles and Practice of Engineering examination is a computer-based examination designed to determine proficiency and qualification to engage in the practice of professional engineering only in a specific branch. The Principles and Practice of Engineering two-module Structural examination is a computer-based examination designed to determine proficiency and qualification to engage in the practice of structural engineering. A separate examination shall be required for each branch in which licensure is granted. An applicant may obtain a Structural branch license by passing either the Principles and Practice of Engineering Civil (Structural) examination or the Principles and Practice of Engineering two-module Structural examination.

c. Passing scores. The board reviews test results for each examination and determines what level shall constitute a minimum passing score for that examination. In making its determination, the board generally is guided by the passing score recommended by the NCEES. The board fixes the passing score for each examination at a level which it concludes is a reasonable indication of minimally acceptable professional competence.

d. Reexamination. An applicant who fails an examination may request reexamination at the next examination period without reapplication to the board. If the applicant intends to retake the examination, the applicant must notify the examination service selected by the board to administer the examinations prior to the application due date for the examination.

e. Failure to appear. An applicant who fails to appear for an examination may sit for the examination the next time it is offered without reapplication provided the application will not be more than one year old at the time of the application due date for the examination and the applicant notifies the examination service selected by the board to administer the examinations prior to the application due date for the examination.

f. Materials permitted in examination room. For security reasons, applicants shall comply with requirements regarding materials permitted in the examination room as issued by the National Council of Examiners for Engineering and Surveying and provided to candidates prior to the examination.

g. Release of examination results. Results of any examination shall only be reported as pass or fail except that the candidate who fails an examination may be provided with the candidate's converted score and a diagnostic report indicating areas of weakness, as available.

4.1(7) Examination subversion. Any individual who subverts or attempts to subvert the examination process may, at the discretion of the board, have the individual's examination scores declared invalid for the purpose of licensure in Iowa, be barred from engineering licensure and examinations in Iowa, or be subject to the imposition of other sanctions the board deems appropriate.

a. Conduct that subverts or attempts to subvert the examination process includes, but is not limited to:

(1) Conduct that violates the security of the examination materials, such as removing from the examination room any of the examination materials; reproducing or reconstructing any portion of the licensing examination; aiding by any means in the reproduction or reconstruction of any portion of the licensing examination; or selling, distributing, buying, receiving, or having unauthorized possession of any portion of a future, current, or previously administered licensing examination.

(2) Conduct that violates the standards of test administration, such as communicating with any other examination candidate during the administration of the licensing examination; communicating with others outside of the examination site during the administration of the examination; copying answers from another candidate or permitting one's answers to be copied by another candidate during the administration of the examination; or having in one's possession during the administration of the licensing examination any device or materials that might compromise the security of the examination or examination process, such as calculating and computing devices not on the list of devices approved by the examination provider or provided by the examination provider.

(3) Conduct that violates the examination process, such as falsifying or misrepresenting educational credentials or other information required for admission to the licensing examination or impersonating an examination candidate or having an impersonator take the licensing examination on one's behalf.

b. Any examination candidate who wishes to appeal a decision of the board under this subrule may request a contested case hearing. The request for hearing shall be in writing, shall briefly describe the basis for the appeal, and shall be filed in the board's office within 30 days of the date of the board decision that is being appealed. Any hearing requested under this subrule shall be governed by the rules applicable to contested case hearings under 193—Chapter 7.

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